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94. The apparatus as defined in Claim 93, wherein the first member is a drive shank of a drill bit and the second member is a drill bit body.

95. The apparatus as defined in Claim 93, wherein said first member is a drill bit body and the second member is comprised of at least one drill cutter movably mounted on the drill bit body.

96. The apparatus as defined in Claim 93, further comprising:
a non-resilient transfer member for transferring torque and weight from the first member through the spacer to the second member.

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97. The apparatus as defined in Claim 96, wherein the transfer member includes at least one elongate member passing through the second member and engaging at least one recess in the first member.

98. The apparatus as defined in Claim 96, wherein the transfer member includes a plurality of recesses in one of the first and second members for engaging corresponding gear components in the other of the first and second members.

99. The apparatus as defined in Claim 98, wherein the transfer member includes a threaded locking ring surrounding the first member and engaging threads on the second member.

100. The apparatus as defined in Claim 93, wherein the spacer includes an elastomeric spacer extending between at least part of the first member and the second member.

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101. The apparatus as defined in Claim 100, wherein the elastomeric spacer comprises a hydrogenated nitrile rubber having a Shore A hardness of at least 80.

102. The apparatus as defined in Claim 100, wherein the elastomeric spacer comprises a layered body having at least one elastomeric material layer and at least one metal layer.

103. The apparatus as defined in Claim 93, wherein the resilient spacer comprises a hollow body containing a compressible fluid.

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104. The apparatus as defined in Claim 103, wherein the hollow body transfers torque between the first member and the second member.

105. The apparatus as defined in Claim 93, further comprising:
each of the first and second members having cooperating passageways therein; and
a compressible seal for sealing engagement with the first member and the second member to prevent escape of fluid from the passageways in the first member and the second member.

106. The apparatus as defined in Claim 105, further comprising:
a flexible pipe providing fluid communication between the passageways in the first member and the second member.

107. The apparatus as defined in Claim 94, further comprising at least one cutter movably mounted on the drill bit body.

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108. The apparatus as defined in Claim 107, wherein the cutter is adhered to the drill bit body by an elastomeric spacer.

109. An assembly for incorporating along a drill string, comprising:

a first member including a drill string;

a second member including a drill member;

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a transfer member for transmitting weight and torque between the first member and the second member through a resilient spacer, said transfer member extending between the first member and the second member permitting the first member to tilt with respect to the second member, and wherein the second member is connected to the first member in a free-floating relationship, allowing the second member to tilt and move laterally with respect to the first member under an applied load to the drill string.

110. The assembly as defined in Claim 109, wherein the transfer member includes a series of radial teeth on the first member that loosely engage corresponding recesses in the second member, and wherein radial outer surfaces on the teeth and opposed base surfaces of the recesses are configured to allowing tilting of the first member with respect to the second member.

111. The assembly as defined in Claim 110, wherein the second member is formed with a connecting means for attaching thereto of a drill bit.

112. An apparatus for simulating drilling, comprising:

at least one rigid rotatable body;

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a drill bit for contacting a simulated bottom hole surface and connected to the rigid rotatable body;

a rotation member for rotating the rigid rotatable body and the drill bit; and

a flexible connector separating at least one of a rigid rotatable body and the drill bit and the rotatable member and the drill bit.

113. An apparatus for use in a drill string and drill bit assembly, comprising:

a first member for attachment to the drill string;

a second member for attachment to at least one drilling member;

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a resiliently deformable connecting member between the first member and the second member for allowing tilting the first member with respect to the second member while transmitting torque and weight from the first member to the second member, the second member being connected by the connecting member to the first member in a free-floating relationship, thereby allowing the second member to tilt and move laterally with respect to the first member in response to reaction forces experienced during use of a drill bit and wherein the connecting member includes an elastomeric spacer extending between at least part of the first member and the second member and wherein the elastomeric spacer comprises a layered body having at least one elastomeric material layer and at least one metal layer.

114. An apparatus for use in a drill string and drill bit assembly, comprising:

a first member for attachment to the drill string;

a second member for attachment to at least one drilling member;

a resiliently deformable connecting member between the first member and the second member for allowing tilting the first member with respect to the second member while transmitting

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torque and weight from the first member to the second member, the second member being connected by the connecting member to the first member in a free-floating relationship, thereby allowing the second member to tilt and move laterally with respect to the first member in response to reaction forces experienced during use of a drill bit and wherein the connecting member comprises a hollow body containing a compressible fluid.

115. The apparatus as defined in Claim 114 wherein the hollow body transfers torque between the first member and the second member.

Respectfully submitted,

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CERTIFICATE OF MAILING

I, Geri Field, hereby certify that this correspondence and all referenced enclosures are being deposited with the United States Postal Service as first class mail in an envelope addressed to: Box CPA, Assistant Commissioner For Patents, Washington, DC 20231 on June 8, 2000.

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